

Image Through a Scattering Medium using Femtosecond light pulse gating method

Guofu Chen

State Key Lab. of Transient Optics, XIOPM, China

chengf@dns.opt.ac.cn

This paper presents a holography through high scatter mediums. Femtosecond light pulses are used as object light and reference light. When light passes through a high scatter medium, there are ballistic light, snake light and diffusive light in transmitting light. However, ballistic and snake light are very weak, diffusive light is very strong so that they can not be imaged directly. By using femtosecond laser electronic holographic gating method to gate ballistic light and snake light and multi-holograms processing technology, high quality images can be obtained.

A Ti:sapphire mode-locked laser is used as light source which has repetition rate 100MHz, central wavelength 800nm, a duration of pulses 20fs and average output power 80mw. A general CCD is used to record holograms. 0.5mm metal wires which are placed in high scatter mediums as chicken tissue, potato slice and milk, are imaged.